

GENERIC · POWERTRAIN

P2B2D

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2B2D

Engine Coolant Temperature Sensor 5 Circuit Low

P2B2D means the powertrain control module (PCM) has detected a low-voltage condition on the signal circuit of engine coolant temperature sensor 5. The PCM expects the sensor's output to stay within a calibrated range, and a sustained low reading tells it the circuit is shorted to ground or the sensor has failed.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Coolant temperature gauge reads cold or does not move after the engine warms up
- Radiator cooling fan runs constantly because the PCM thinks the engine is cold
- Poor fuel economy and rich-running exhaust smell from over-fueling
- Hard starting or rough idle when the engine is cold
- Possible overheating if the fan control strategy is affected

Common causes, most likely first

- 1 Engine coolant temperature sensor 5 internally shorted to ground
- 2 Signal wire between sensor 5 and the PCM chafed and touching ground
- 3 Corroded, loose, or water-intruded connector at sensor 5
- 4 PCM internal fault pulling the signal circuit low
- 5 Aftermarket sensor with incorrect resistance curve installed
- 6 Coolant contamination or low coolant level affecting sensor reading

How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P2B2D before clearing anything
- 2 Inspect sensor 5 connector and harness for corrosion, chafing, or coolant intrusion
- 3 Measure sensor resistance cold and hot and compare with the manufacturer's temperature-resistance chart
- 4 Backprobe the signal circuit at the PCM and check for a short to ground with the sensor disconnected
- 5 Repair or replace the damaged section of signal wire if a short is found
- 6 Replace engine coolant temperature sensor 5 if its resistance is out of specification
- 7 Clear codes, verify the coolant temperature PID reads realistically during a road test, and confirm the code does not return



Why sensor 5 is not always the culprit

- A shorted signal wire is just as common as a failed sensor, so ohm-testing the harness before replacing parts saves money.
- Some vehicles use sensor 5 for a secondary cooling loop or transmission cooler, so the reading may not match the primary coolant gauge.
- A stuck-open thermostat can mimic a low coolant temperature signal and set this code indirectly on some strategies.
- Aftermarket sensors with the wrong resistance curve frequently set this code even though they are new.
- The PCM may default to a fixed coolant temperature value, masking the fault and making the engine run rich without an obvious driveability complaint.

Can I keep driving with P2B2D?

You can usually drive short distances to a repair shop, but avoid heavy loads and long trips because the PCM may over-fuel the engine and the cooling fan may run continuously. If the temperature gauge climbs above normal, stop and shut the engine off.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with resistance and continuity functions
- Backprobe pins or piercing probes
- Manufacturer's temperature-resistance chart or service information
- Basic hand tools for connector and sensor access

Reading P2B2D

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
B	Hybrid propulsion.
2D	The exact fault within that area.

Often seen with

P0115 Engine Coolant Temperature Circuit Malfunction · **P0117** Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P2B2C** Engine Coolant Temperature Sensor 5 Range/Performance · **P2B2E** Engine Coolant Temperature Sensor 5 Circuit High



See it working

Watch the animated explainer [Engine Cooling System Trainer: How Engines Stay Cool](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2b2d/>

